

University of Michigan
Center for Occupational Health & Safety Engineering
Annual Program Highlights
Reporting Period: July 1, 2012 – June 30, 2013
Principle Investigator: Stuart Batterman

Center Highlights

Industrial Hygiene
Program Director: Edward Zellers

Edward Zellers, PhD, Professor of Environmental Health Sciences and Chemistry, and IH Program Director, presented a keynote address at the 10th International Conference on Nanomechanical Sensing entitled "Plenty of Challenges Left" in Palo Alto, California in May, 2013.

Edward Zellers, PhD, Professor of Environmental Health Sciences and Chemistry and IH Program Director, and his research group published two articles in 2013 that documented the first successful field tests using microfabricated gas chromatography technology for environmental exposure monitoring of volatile organic compounds. The technology allows rapid detection and chemical identification of low concentrations mixtures relevant to occupational and environmental applications.

John Meeker, PhD, CIH, Professor of Environmental Health Sciences, was appointed as Associate Dean for Research in the School of Public Health. He continues his teaching in Industrial Hygiene and Environmental Health Sciences.

Occupational Health in Nursing
Program Director: Marjorie McCullagh

The OHN Program student enrollment and graduation has been growing. The Program admitted four new students in 2013, and currently enrolls 17 students. We graduated 2 Ph.D. students and 2 M.S. students in the past year, and each is employed in occupational health positions in academia or clinical practice.

The OHN Program faculty are engaged in research promoting and protecting the health of high-risk workers in agriculture, health care, and construction. Marjorie McCullagh, Associate Professor of Nursing and OHN Program Director, continues her translational research to encourage use of hearing protection, and her research study has enrolled 496 farmers nationwide. NIOSH recently announced that over 311,000 copies of an educational brochure for farmers regarding prevention of noise-induced hearing loss, of which Dr. McCullagh was a contributor, were distributed in all 50 US states as well as internationally (in Puerto Rico, Canada, Sri Lanka, Algeria, Zambia, Indonesia, and Australia). A pilot test of a novel educational program for farm and rural youth to prevent noise-induced hearing loss resulted in favorable changes in knowledge and behavior; an application for expanded testing of the intervention, is currently under review.

Occupational Safety Engineering and Ergonomics
Program Director: Monroe Keyserling

Don Chaffin, PhD, the Richard G Snyder Distinguished University Professor Emeritus of Industrial and Operations Engineering, Biomedical Engineering, and Environmental Health Science, and the former Center Director of the Michigan ERC, was a keynote speaker at the 2012 IIE Applied Ergonomics Conference. He

continues to serve on National Research Council committees on topics relevant to ergonomics and safety.

Richard Hughes, PhD, Associate Professor of Orthopedic Surgery and Industrial and Operations Engineering, was elected President of the American Society of Biomechanics in 2012.

Yili Liu, Arthur F Thurnau Professor and Professor of Industrial and Operations Engineering, developed two new courses including one titled "Global Cultural Systems Engineering." This course covers a variety of topics relevant to ergonomics and safety from a global standpoint, including cultural expectations in product and systems design, and cultural influences on human decision making and behavior.

OSE students continue to receive external support and recognition. For example, Denny Yu was awarded the National Science Foundation Graduate Student Fellowship (2011-present), the National Science Foundation Engineering Innovation Fellowship (NSF EIFP) in 2012, and the American Society of Safety Engineers, Liberty Mutual Safety Research Fellowship in 2012. He was also the first place winner in the Engineering Graduate Symposium at the IOE & Financial Engineering Technical Session.

Pilot Project Research Training Program
Program Director: Richard Nietzel

PPRT leadership transitioned from John Meeker, Sc.D., Associate Professor of Environmental Health Sciences and now Associate Dean for Research in the School of Public Health, to Rick Nietzel, Ph.D., Assistant Professor in Environmental Health Sciences. The program organization and focus has remained stable over this time, as have the review committee and review process.

The PPRT funded three competitively selected projects during the current reporting period. (1) "Paced Manual Work Variations and Exposure to Risk Factors of Work-related Musculoskeletal Disorders" conducted by Vernaliz Carrasquillo under faculty sponsor Thomas Armstrong, PhD, Professor in the Department of Industrial and Operations Engineering at the University of Michigan. This project focused on the PPRT core area of Occupational Safety and Ergonomics. (2) "Development of a Biomechanical Hand Model to Predict Multi-Segmental Grip Forces" conducted by Greg Slota under faculty sponsor Na Jin Seo, PhD, Assistant Professor in the Department of Industrial and Manufacturing Engineering at the University of Wisconsin-Milwaukee. This project focused on the PPRT core area of Occupational Safety and Ergonomics, and has resulted in one publication. (3) "Development of Biomechanical Force Prediction Model Using Motion Data" conducted by Joon Oh Seo under faculty sponsor SangHyun Lee, PhD, Assistant Professor in the Department of Civil and Environmental Engineering at the University of Michigan. This project focused on the PPRT core area of Occupational Safety and Ergonomics.